

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Dennis W. Solas

Continuation Application of

Application No.: 09/465,126

Filed: December 17, 1999

For: Nucleotides and Analogs Having Photoremovable Protecting Groups

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PRELIMINARY AMENDMENT

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

Please amend the application as follows:

In the Claims

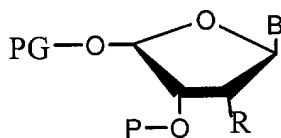
Please cancel Claims 1-56.

Please add new Claims 57-74 as follows:

57. (New) A compound having a photoremovable protecting group covalently attached to a C-3' or C-5' oxygen atom, wherein said compound is selected from the group consisting of a natural or synthetic nucleoside or a natural or synthetic nucleoside having an activated phosphorus group.

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58. (New) A compound of Claim 57, wherein said oxygen atom is a C-3' oxygen of a ribonucleoside phosphoramidite or a ribonucleoside H-phosphonate.
59. (New) A compound of Claim 58, wherein said oxygen atom is a C3' oxygen of a ribonucleoside deoxyribonucleotide phosphoramidite or a deoxyribonucleoside H-phosphonate.
60. (New) A compound of Claim 57, wherein said oxygen atom is a C-3' oxygen of a natural nucleoside phosphoramidite.
61. (New) A compound of Claim 57, having the formula:



wherein

B is selected from the group consisting of natural or synthetic adenine, natural or synthetic guanine, natural or synthetic thymine, natural or synthetic cytosine, and natural or synthetic uracil;

R is selected from the group consisting of hydrogen, protected hydroxy, halogen and alkoxy;

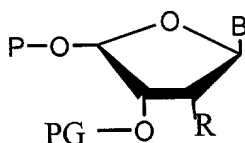
P is an activated phosphorus group,

PG is photoremovable protected group selected from the group consisting of NVOC, MeNPOC, NPOC, MenVOC and phrenylmethyloxycarbon.

62. (New) A compound of Claim 61, wherein R is hydrogen or protected hydroxy.

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63. (New) A compound of Claim 61, wherein P is selected from the group consisting of phosphoramidite, phosphochloridite, an H-phosphonate group and a 2-cyanoethylphosphoramidite group.
64. (New) A compound of Claim 61, wherein B is selected from the group consisting of adenine, thymine, uracil, cytosine and guanine.
65. (New) A compound of Claim 61, wherein B is selected from the group consisting of adenine, thymine, uracil, cytosine and guanine, R is hydrogen or protected hydroxy, or alkoxy, P is a 2-cyanoethylphosphoramidite group.
66. (New) A compound of Claim 57, having the formula:



wherein

B is selected from the group consisting of natural or synthetic adenine, natural or synthetic guanine, natural or synthetic thymine, natural or synthetic cytosine, and natural or synthetic uracil;

R is selected from the group consisting of hydrogen, protected hydroxy, halogen and alkoxy;

P is an activated phosphorus group,

PG is photoremovable protected group selected from the group consisting of NVOC, MeNPOC, NPOC, MenVOC and phrenylmethyloxycarbon.

67. (New) A compound of Claim 66, wherein R is hydrogen or protected hydroxy.

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68. (New) A compound of Claim 66, wherein P is phosphoramidite, or phosphochloridite, or an H-phosphonate group or a 2-cyanoethylphosphoramidite group.
69. (New) A compound of Claim 66, wherein B is selected from the group consisting of adenine, thymine, uracil, cytosine and guanine.
70. (New) A compound of Claim 66, wherein B is selected from the group consisting of adenine, thymine, uracil, cytosine and guanine, R is hydrogen or protected hydroxy, or alkoxy, P is a 2-cyanoethylphosphoramidite group.
71. (New) A method for preparing a compound of Claim 57, said method comprising attaching a photoremovable protecting group to C-3' or C-5' oxygen atom of a natural or synthetic nucleoside and subsequently attaching an activated phosphorous group.
72. (New) A method of Claim 71, wherein said compound is selected from the group consisting of natural phosphoramidites and natural nucleoside H-phosphonates.
73. (New) A method of Claim 71, wherein said compound is selected from the group consisting of natural deoxribonucleoside phosphoramidites.
74. (New) A method of activating a terminal nucleotide in a nucleic acid, said terminal nucleotide having a photoremovable protecting group, said method comprising removing said photoremovable protecting group from a latent C3' or C-5' hydroxy moiety in said nucleic acid.

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REMARKS

Support for new Claims 57-74 as added herein can be found in the Specification, for example, on page 4, lines 1-14 and 21-30; page 5, lines 16-27; page 8, line 28 through page 14, line 14; page 15, lines 9-37; page 37, line 22 through page 38, line 19; page 45, lines 7-18; and page 57, lines 32-37. No new matter is added.

Applicants note that the title as shown in the Specification filed concurrently has been amended to more particularly describe the invention. Additionally, the related applications paragraph as shown in the Specification filed concurrently, has been amended to more particularly describe the priority chain. In the Brief Description of the Figures and in the reference to the figures within the Specification for Figures 6, 7 and 8, the Specification has been amended to reflect the proper numbering of Figures 6, 7 and 8 (*i.e.*, Figures 6a - 6b, 7a - 7b and 8a - 8b).

Inventorship Amendment

Please delete the following inventors: James L. Winkler, Christopher P. Holmes and Dennis W. Solas. Please add the following inventors: J. Leighton Read and Michael C. Pirrung. This amendment is requested in accordance with the Consent of Assignee to Correction of Inventorship, Petition to Correct Inventorship and Statement of Facts in Support of Petition to Correction Inventorship which were filed in U.S. Serial No. 09/465,126 (originally filed in U.S. Serial No. 08/466,632). With this amendment the proper inventorship of the subject application is **Stephen P.A. Fodor, Lubert Stryer, J. Leighton Read and Michael C. Pirrung.**

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CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned at (978) 341-0036.

Respectfully submitted,  
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